THOMAS W. DRESCHEL, PH.D.

EDUCATION:

University of Illinois,	B. S. Biological Sciences, 1975
Southern Illinois University,	M. A. Zoology (Limnology), 1980
Florida Institute of Technology,	Ed.S. Science Education (Environmental Science), 1995
Florida Institute of Technology,	Ph.D. Science Education (Environmental Science), 1996

EXPERIENCE:

Supervising and Management of Environmental Monitoring and Research and Science Education Programs. Extensive involvement in coordinating and participating in various NASA educational programs. More than twenty years of experience in the design and coordination of environmental monitoring projects, the conducting of laboratory and field environmental surveys and in the developing and conducting of hydroponic systems and plant studies supporting NASA's Controlled Biological Systems research.

EMPLOYMENT:

Senior Supervising Environmental Scientist, South Florida Water Management District, Everglades Division.

Serves as the supervisor of the Landscape Analysis, Mapping, and Data Automation section of the Everglades Division of the South Florida Water Management District in West Palm Beach, FL. The section is responsible for remote sensing of the Everglades restoration projects. Additional responsibilities lie in the management of data collected in Everglades restoration research (data entry, data base maintenance, provide data analysis and reporting tools, etc.). From October 2005 through the present.

Program Manager, NASA Space Biology Outreach Program

On detail from the University of Florida to NASA under the Intergovernmental Personnel Act as Program Manager of NASA Fundamental Space Biology Outreach. From September 2002 – September 2005.

This is a national program for developing and distributing educational outreach projects and programs related to NASA research in basic biology.

University of Florida, Institute of Food and Agricultural Sciences

Associate Researcher, Kennedy Space Center, FL, June 2002-September 2002.

Duties included conducting research in to plant response to culture in a highly controlled hydroponic system and serving as a liaison between the University of Florida SABRE, NASA, and other academic, government, and industry partners.

Barry University, Merritt Island, Florida Campus

Adjunct instructor for the course: EVS 306, Environment. July 9-September 10, 2002.

Dynamac Corporation

Science Education Director for Fundamental Biology Outreach and the Life Sciences Support Contract, Kennedy Space Center, Florida 1995-2002.

Science Education Director for NASA's Fundamental Biology Outreach Program and for the Life Science Support Contract at Kennedy Space Center (KSC). Primary responsibility is the directing of Fundamental Biology outreach for NASA, coordinating Spaceflight and Life Sciences Training Program and Life Sciences Educator Network (LSEN) activities and other NASA educational programs that involve the life sciences. Additional duties involve participating in the design of plant nutrient delivery systems for space and serving as the site supervisor for rain monitoring for the National Atmospheric Deposition Program.

Brevard Community College

Adjunct Instructor/Professor in Biology, Titusville, Florida 1999-2002

Instructor/Professor for the courses: General Biology, BSCC 1010, a four-hour lecture and laboratory course and Physical Science, PSC1341, a three hour lecture and laboratory course, both taught at the Brevard Community College Titusville Campus and the Kennedy Space Center Campus.

The Bionetics Corporation

Lead, Technology Development, Kennedy Space Center, Florida 1983 to 1994

Technical lead for Technology Development in the Ecological Programs at Kennedy Space Center (KSC). Activities included: Establishment and coordination of acid rain monitoring activities as part of the National Atmospheric Deposition Program (Site Supervisor); assist in quantifying environmental effects of Space Shuttle launches; coordinating/performing pre-launch deposition briefings from computer model predictions prior to launch; design and construction of hydroponic nutrient delivery systems in support of the Controlled Ecological Life Support Systems (CELSS) Breadboard Project and the Plant Space Biology Project.

Other activities have included assisting in the set-up and certification of an inorganic chemistry laboratory; analysis of water, soils, sediments, tissue and wastes for nutrients, metals and organic carbon; laboratory simulations of Space Shuttle launch effects on surface waters; field monitoring and sampling of surface waters; acting as Coordinator of Biomass Production Chamber (BPC) activities, involving the activation and operation of a two-story, 112 cubic meter, atmospherically sealed controlled environment hydroponic plant growth chamber; and acting as Supervisor of Aquaculture Research for CELSS, involving design and construction of a closed Tilapia culture system for quantifying mass flows.

Also served as Experiments Integrator for the European Space Agency Biorack experiments on the First International Microgravity Laboratory Mission, January 22 through January 30, 1992.

Applied Environmental Sciences and Engineering Services

Limnologist/Chemist, environmental consulting, Marco Island, Florida 1980 to1983

Conduct environmental monitoring and laboratory analysis activities for a number of environmental monitoring programs established in/at Marco Island, Tampa, Deltona Lakes and a number of other areas within Florida. Activities included field work and laboratory analysis, report writing and presentations as well as boat/equipment maintenance and repair.

Southern Illinois University

Teaching Assistant, Introductory Zoology Laboratory, Southern Illinois University, Carbondale, Illinois

1978 to 1980

Set-up and teach the laboratory sections of the Introductory Zoology course. Duties included daily set-up and teaching as well as developing quizzes and laboratory exams.

Institute of Gas Technology

Assistant Chemist, Coal and Petroleum Laboratory, Institute of Gas Technology, Chicago, Illinois 1976 to 1978.

Laboratory analysis of coal and petroleum products in support of energy research, particularly gasification research. Analyses included carbon, hydrogen, ash, volatile matter, sulfur, and heating value.

Kadison Laboratories

Food Chemist, Kadison Laboratories, Chicago, Illinois 1975-1976

Laboratory analysis of food products, product development, quality control in support of food manufacture. Analyses included sugar, fat, starch, protein and ash.

MEMBERSHIPS AND ACTIVITIES:

Florida Academy of Sciences

Sigma Xi

NASA Center Directors Guest Award-Kennedy Space Center

NASA STS-1 20th Anniversary Honoree

Space Act Award (KSC Case No. KSC-11375, An Improved Plant Nutrient Delivery System for Microgravity)

NASA Group Achievement Award for the Space Biology Outreach Program

PUBLICATIONS:

Shah, N. N., T. W. Dreschel, C. R. Hall, and T. Foster. 2006. Evaluation of a Porous Tube Hydroponics System as a Testbed for Remote Sensing Instrumentation. Northwestern Undergraduate Research Journal, Volume 3:23-27.

Trotman, A. A., C. E. Morris, W. A. Hill, W. J. Buchanan, A. M. S. Rao, C. O. Williams, M. R. Washburn, W. C. Lennard, J. R. Barfus, L. A. Lichtenberger, T. W. Dreschel, W. Patterson, and C. N. Bowman. 2005. The Spaceflight and Life Sciences Training Program – Developing Human Capital for Space Exploration through Systematic Scholarship. *Transactions Journal of Aerospace*, pp. 943-951, Society of Automotive Engineers, Warrendale, PA.

Porterfield, D. M., T. W. Dreschel, and M. E. Musgrave. 2000. A Ground-Based Comparison of Nutrient Delivery Technologies Originally Developed for Growing Plants in the Spaceflight Environment. *HortTechnology* 10(1): 179-185.

Wheeler, R. M., C. L. Mackowiak, G. W. Stutte, J. C. Sager, N. C. Yorio, L., M. Ruffe, R. E. Fortson, T. W. Dreschel, W. M. Knott and K. A. Corey. 1996. NASA's Biomass Production Chamber: A Testbed for Bioregenerative Life Support Studies. *Advances in Space Research*, 18(4/5):215-224

Johnson, C. F., T. W. Dreschel, C. S. Brown, and R. M. Wheeler. 1996. Optimization of Moisture Content for Wheat Seedling Germination in a Cellulose Acetate Medium for a Spaceflight Experiment. *Advances in Space Research*, 18(4/5):239-242.

Heagle, A. S., J. E. Miller, B. I. Chevone, T. W. Dreschel, W. J. Manning, P. M. Mc Cool, C. L. Morrison, G. E. Neely, and J. Rebbeck. 1995. Response of a White Clover Indicator System to Tropospheric Ozone at Eight Locations in the United States. *Water, Air and Soil Pollution*, 85:1373-1378.

Cox, W. M., C. S. Brown, and T. W. Dreschel. 1994. Hydroponic Feed with Suction. *NASA Tech Briefs*, 18(9): 128.

Dreschel, T. W., C. S. Brown, W. C. Piastuch, C. R. Hinkle, and W. M. Knott. 1994. Porous tube plant nutrient delivery system development: A device for nutrient delivery in microgravity. *Advances in Space Research*, 14(11):47-51.

Clark, G. J., G. E. Neville, Jr., and T. W. Dreschel. 1994. A root moisture sensor for plants in microgravity. *Advances in Space Research*, 14(11):213-216.

Dreschel, T. W. and C. S. Brown. 1993. Water Conserving Plant-Growth System. *NASA Tech Briefs*, 17(1):89-90.

Dreschel, T. W. 1993. Aerator Combined with Bubble Remover. *NASA Tech Briefs*, 17(10):98.

Bushong, W. E., R. C. Fox, C. S. Brown, R. R. Biro, and T. W. Dreschel. 1993. Clinostat Delivers Power to Plant-Growth Cabinets. *NASA Tech Briefs*, 17(12):92-93.

Brown, C. S. and T. W. Dreschel. 1993. Sealed Plant-Growth Chamber for Clinostat. *NASA Tech Briefs*, 17(12):93.

Dreschel, T. W. 1992. Tubular Membrane Plant-Growth Unit. *NASA Tech Briefs*, 16(2):113.

Dreschel, T. W. 1992. Monitoring and Controlling Hydroponic Flow. *NASA Tech Briefs*, 16(2):113-114.

Dreschel, T. W. 1992. Hydroponics. *The McGraw-Hill Encyclopedia of Science and Technology*, Seventh Edition, Volume 8:607-610.

Takahashi, H., C. S. Brown, T. W. Dreschel, and T. K. Scott. 1992. Hydrotropism in pea roots in a porous tube-water delivery system. *HortScience*, 27(5):430-432.

Berry, W. L., G. Goldstein, T. W. Dreschel, R. M. Wheeler, J. C. Sager, and W. M. Knott. 1992. Water relations, gas exchange, and nutrient response to a long term constant water deficit. *Soil Science*, 153(6): 442-451.

Madsen, B. C., T. Kheoh, C. R. Hinkle, and T. W. Dreschel. 1992. Characterization and evaluation of acid rain in East Central Florida from 1978 to 1987. *Water, Air, and Soil Pollution*, 65:7-21.

Brown, C. S., W. M. Cox, T. W. Dreschel, and P. V. Chetirkin. 1992. The Vacuum-Operated Nutrient Delivery System: Hydroponics for Microgravity. *HortScience*, 27(11):1183-1185.

Dreschel, T. W., R. B. Smith, and D. R. Breininger. 1990. Florida Scrub Jay mortality at roadsides. *Florida Field Naturalist*, 18(4):82-83.

Dreschel, T. W. and J. C. Sager. 1989. Control of water and nutrients using a porous tube: A method for growing plants in space. *HortScience*, 24(6):944-947.

Dreschel, T. W., B. C. Madsen, L. A. Maull, C. R. Hinkle, and W. M. Knott. 1989. Precipitation chemistry: Atmospheric loadings to the surface waters of the Indian River Lagoon Basin by rainfall. *Florida Scientist*, 53(3):184-188.

Dreschel, T. W. and C. R. Hall. 1989. Quantification of Hydrochloric acid and particulate deposition resulting from Space Shuttle Launches at John F. Kennedy Space Center, Florida. *Environmental Management*, 14(4):501-507.

Dreschel, T. W. 1988. Basic programming in water and wastewater analysis. *NASA Tech Briefs*, 12(1):78-79.

PATENT:

Dreschel, T. 1990. Plant Nutrient Delivery System having a Porous Tubular Member. Patent # 4,926,585. United States Patent and Trademark Office, Washington, D. C.

PROPOSALS:

Nazarenko, V. N. and T. W. Dreschel. 2001. Humates and Hydroponics: Increasing Production in Closed Systems. A Proposal in response to the Civilian Reasearch & Development Foundation Request for Proposals.

Dreschel, T. W. and C. R. Hall. 2000. A Ground-Based Testbed for Evaluating Plant Remote Sensing Technology. A proposal to the Florida Space Research Institute.

Dreschel, T. W. 2000. Evolution of microbial populations and communities-an education and public outreach proposal, companion to the science proposal. A proposal to the NASA Astrobiology Institute.

Levine, H. W., Y. I . Berkovich, P. V. Chetirkin, and T. W. Dreschel. 2000. A Salad Production System for the International Space Station. A proposal to the NASA Small Business Innovative Research Program.

Levine, H., W. Piastuch, and T. Dreschel. 1998. Development of a Microgravity-Rated Hydroponic Plant Culture Apparatus. A proposal to the NASA Space Life Sciences Program announcement #NRA 98-HEDS-01, accepted.

REPORTS AND PROCEEDINGS:

Dreschel, T. W., L. A. Lichtenberger, P. V. Chetirkin, L. C. Garner, and J. R. Barfus and V. I. Nazarenko. 2005. International Space Education Outreach: Taking Exploration to the Global Classroom. Paper number 05ICES-62*, The International Conference on Environmental Systems, Rome, Italy, July 2005.*

Dreschel, T. W., C. R. Hall, T. E. Foster, M. Salganic, L. Warren, and M. Corbett. 2005. Examining Dehydration and Hypoxic Stress in Wheat Plants Using a Porous Tube Plant Nutrient Delivery System Developed for Microgravity. Paper number 05ICES-64, *The International Conference on Environmental Systems, Rome, Italy, July 2005.*

Trotman, A.A., J.R. Barfus, C.E. Morris, W.A. Hill, W.J. Buchanan, A.M. Rao, C.O. Williams, M.R. Washburn, and W.C. Lennard, L.A. Lichtenberger, T.W. Dreschel, W. Patterson, and C.N. Bowman. 2004. The Spaceflight and Life Sciences Training Program – Developing Human Capital for Space Exploration through Systematic Scholarship. SAE Tech. Paper #2004-01-2422.

Dreschel, T. W., C. R. Hall, and T. E. Foster. 2004. Demonstration of a Porous Tube Hydroponic System to Control Plant Moisture and Growth. NASA Technical Memorandum # 2004-211533, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T., P. Williams, C. Williams, and D. Lauffer. 2002. Brassicas and Butterflies: Hands-on Activities with Potential for Developing Space Flight Experiments for Students. Proceedings of *The 39th Annual Space Congress*, Session IIIA, Paper #1.

Lefsrud, M. G., B. Ohneck, D. E. Kopsell, and T. W. Dreschel. 2002. A Porous Tube Nutrient Delivery System for the Edmonton Space and Science Centre. Mimeogr. Paper # 02-4073 presented at the American Society of Agricultural Engineers Annual International Meeting, Chicago, Illinois.

Tynes, G. K, T. W. Dreschel, H. Kasahara, and H. G. Levine. 2001. An Evaluation of a Fibrous Ion Exchange Resin Substrate for the Provision of Nutrients to Wheat Growing on a Porous Tube Nutrient Delivery System. Paper # 01ICES-303 presented to the 2001 Meeting of the Society of Automotive Engineers.

Dreschel, T. W., C.R. Hall, J. Jones, and A. Brooks. 2001. Controlling Leaf Moisture Using a Porous Tube Plant Culture System. Proceedings of the 28th Annual Conference on Plant Growth Regulation Society of America, July 1-5, 2001, Miami Beach, pp 47-52.

Dreschel, T. W., P.V. Chetirkin, S. Behel, and V. Nazarenko. 2001. Collaborative Ukrainian Experiment-Science and Technology Exchange for Students (CUE-STEPS). Proceedings of *The 38th Annual Space Congress,* Session IIC, Paper #3.

Lefsrud, M. G., G. A. Giacomelli, H. W. Janes, and T. W. Dreschel. 2000. Crop Production on the Porous Tube. Mimeogr. Paper # 00-4083 presented at the American Society of Agricultural Engineers Annual International Meeting, Milwaukee, Wisconsin.

Dreschel, T. W., B. McClain, R. Grymes, D. Chamberland, and W. Knott. 2000. SEEDS II: More Tomatoes from Space! (For Classroom Research). Proceedings of *The 37th Annual Space Congress,* Session IC, Paper #3.

Dreschel, T. W. 1999. Science Communication for the Life Sciences at Kennedy Space Center. Proceedings of The 36th Annual Space Congress, Session IID, Paper #1.

Levine, H. G., W. C. Piastuch, and T. W. Dreschel. 1999. Development of a Microgravity-Rated Hydroponic Plant Culture Apparatus. Proceedings of *The 36th Annual Space Congress*, Session IIIB, Paper #6.

Dreschel, T. W., P. H. Williams, V. I. Nazarenko, and P. V. Chetirkin. 1998. A Report on the Collaborative Ukrainian Experiment-Teachers and Students Investigating Plants in Space. Proceedings of The *35th Annual Space Congress,* Session IIID, Paper #4.

Dreschel, T. W., P. H. Williams, V. I. Nazarenko, and P. V. Chetirkin. 1997. The Collaborative Ukrainian Experiment (CUE): Opportunities for Collaboration in Science Education and Research. Proceedings of The 34th Annual Space Congress, Session IID, Paper #6.

Dreschel, T. W. 1996. NASA Kennedy Space Center Educators Workshops: Exploring Their Impacts on Teacher Attitudes and Concerns. Doctoral Dissertation, Department of Science Education, Florida Institute of Technology, Melbourne, Florida.

Dreschel, T. W. 1996. NASA Kennedy Space Center Educators Workshops: Exploring Their Impacts on Teacher Attitudes and Concerns. NASA Technical Memorandum # 112241, The National Aeronautics

and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T., J. Hodges, S. Dutczak, and R. Fronk. 1996. Measuring the Concerns and Beliefs of Teachers: A Possible Means for Evaluating the Efficacy of NASA Teacher Enhancement Workshops. Proceedings of The 33rd Annual Space Congress, Session IIC, Paper #1.

Dreschel, T., R. Young, J. Hodges, and J. Ragsdale. 1995. Implementation of a NASA Life Sciences Workshop as Part of the Summer Teacher Enhancement Program. Proceedings of The 32nd Annual Space Congress, Session IIIC, Paper #9.

Piastuch, W. C., T. W. Dreschel, J. O. Bledsoe, and C. S Brown. 1995. A Small, Closed, Computer Controlled Chamber for Study of Atmospheric and Water Availability Effects on Plant Growth and Metabolism. Mimeogr. Paper # 95-7656 presented at the American Society of Agricultural Engineers Summer Meeting, Chicago, Illinois.

Tsao, D. T. W., M. R. Okos, C. A. Mitchell, J. C. Sager, and T. W. Dreschel. 1994. Characterizing the Transpirational Uptake into Plants Cultivated on a Ceramic Tube Hydroponic System. Mimeogr. Paper #94-4580 presented at the American Society of Agricultural Engineers Summer Meeting, Chicago, Illinois.

Heagle, A. S., J. E. Miller, B. Chevone, T. W. Dreschel, W. J. Manning, P. McCool, C. L. Morrison, G. E. Neeley, and J. Rebbeck. 1995. Response of a White Clover Indicator System to Tropospheric Ozone at Eight Locations in the United States. Paper presented to The 5th International Conference on Acidic Deposition. Gothenburg, Sweden, 26-30 June, 1995.

Madsen, B. C. and T. W. Dreschel. 1994. Emission Trends of Sulfur Dioxide and Nitrogen Oxides in the Southeastern United States and Their Influence on Precipitation Composition. Paper presented to *The International Specialty Conference on Acid Rain and Electric Utilities: Permits, Allowances, Monitoring and Meterology*. Tempe, AZ, January 23-25, 1995.

Dreschel, T. W., C. W. Carlson, H. W. Wells, K. F. Anderson, W. M. Knott and W. Munsey. 1993. Physical testing for the Microgravity Plant Nutrient Experiment. Mimeogr. Paper #93-4007 presented at the American Society of Agricultural Engineers Summer Meeting.

Wheeler, R. M., C. L. Mackowiak, J. C. Sager, K. A. Corey, T. W. Dreschel, B. A. Vieux, W. M. Knott, R. P. Prince, and C. R. Hinkle. 1992. Crop Tests in NASA's Biomass Production Chamber. A Review of the First Four Years of Operation. Proceedings of *The International Conference on Life Support and Biospherics*, Huntsville, Alabama, pp 563-573.

Dreschel, T. W., C. S. Brown, C. R. Hinkle, J. C. Sager, R. M. Wheeler, and W. M. Knott. 1992. A Summary of Porous Tube Nutrient Delivery System Investigations from 1985 to 1991. NASA Technical Memorandum # 107546, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Tsao, D., M. R. Okos, J. C. Sager, and T. W. Dreschel. 1992. Development of Physical and Mathematical Models for the Porous Ceramic Tube Plant Nutrification System (PCTPNS). NASA Technical Memorandum # 107551, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida..

Dreschel, T. W., R. M. Wheeler, C. R. Hinkle, J. C. Sager, and W. M. Knott. 1991. Investigating combustion for processing inedible biomass produced in NASA's Biomass Production Chamber. NASA Technical Memorandum # 103821, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T. W., C. F. Bauer, M. S. Koller, and J. C. Sager. 1991. A prototype closed aquaculture system

for controlled ecological life support applications. In: Engineering Aspects of Intensive Aquaculture, *Northeast Regional Agricultural Engineering Service*, #NRAES-49, Ithaca, New York, pp. 48-56.

Dreschel, T. W., C. S. Brown, C. R. Hinkle, J. C. Sager, and W. M. Knott. 1990. Developing future plant experiments for spaceflight. Mimeogr. Paper #90-4533 presented at the *American Society of Agricultural Engineers* Winter Meeting.

Wheeler, R. M., C. L. Mackowiak, T. W. Dreschel, J. C. Sager, R. P. Prince, W. M. Knott, C. R. Hinkle, and R. F. Strayer. 1990. System Development and Early Biological Tests in NASA's Biomass Production Chamber. NASA Technical Memorandum # 103494, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Madsen, B. C., T. Kheoh, C. R. Hinkle, and T. W. Dreschel. 1990. Acid rain monitoring in East-Central Florida from 1977 to the present. In: Proceedings of *The Florida Acidic Deposition Conference*.

Dreschel, T. W., R. M. Wheeler, J. C. Sager, and W. M. Knott. 1989. Factors affecting plant growth in membrane nutrient delivery. In R. D. MacElroy, ed. Controlled Ecological Life Support Systems: CELSS '89 Workshop, NASA Technical Memorandum #102277, Ames Research Center, Moffett Field, California.

Madsen, B. C., T. W. Dreschel, and C. R. Hinkle. 1989. Characterization and evaluation of acid rain in Central Florida from 1978 to 1987, ten year summary report. NASA Technical Memorandum #102149, the National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T. W. 1989, 1988, 1987, 1986 and 1985. Basic programs for water and waste water analysis. In: The Cosmic Software Catalog, NASA's Computer Software Management and Information Center, the University of Georgia, Athens, Georgia.

Dreschel, T. W., J. C. Sager, and R. M. Wheeler. 1988. Status of porous tube plant growth unit research. Mimeogr. Paper #88-4524 presented to *The American Society of Agricultural Engineers*.

Dreschel, T. W., C. R. Hinkle, W. M. Knott, R. P. Prince, and J. C. Sager. 1987. Development of a membrane nutrient system. In: Proceedings of The NASA Space Life Sciences Symposium, Washington, D. C.

Dreschel, T. W., R. P. Prince, C. R. Hinkle, and W. M. Knott. 1987. Porous membrane utilization in plant nutrient delivery. Mimeogr. Paper #87-4025 presented to *The American Society of Agricultural Engineers*.

Schmalzer, P. A., C. R. Hinkle, and T. W. Dreschel. 1986. Far-field deposition from Space Shuttle launches at the John F. Kennedy Space Center, Florida. NASA Technical Memorandum #83104. The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Madsen, B. C., T. W. Dreschel, and C. R. Hinkle. 1986. An evaluation of rain chemistry data for the John F. Kennedy Space Center, Florida and the University of Central Florida, Orlando, Florida. NASA Technical Memorandum #100301, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T. W. and C. R. Hall. 1985. Near-field deposition of chlorides and particulates resulting from launches of the Space Transportation System at the John F. Kennedy Space Center. NASA Technical Memorandum #89194, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T. W. and C. R. Hinkle. 1984. Acid deposition, pH and inorganic carbon interactions: Simulation of Space Shuttle launch cloud effects on estuarine systems. NASA Technical Memorandum #83094, The National Aeronautics and Space Administration, J. F. Kennedy Space Center, Florida.

Dreschel, T. W. 1980. Physical and chemical causes of black water stratification in a strip mine lake. Masters Thesis, Southern Illinois University, Carbondale, Illinois.

PRESENTATIONS AND ABSTRACTS:

Dreschel, T., S. Newman, S. Miao, S. Hagerthey, M. Cook, S. Carstenn, and J. Serino. 2006. Options for Accelerating Recovery of Phosphorus Impacted Areas of the Florida Everglades. Proceedings of the Greater Everglades Ecosystem Restoration Conference, Lake Buena Vista, FL, June 5-9, p. 60 (Abstr.).

Gu, B., S. Miao, and T. Dreschel. 2006. The effects of fire on carbon flux and primary production in nutrient-enriched areas of the Florida Everglades. Abstract submitted to the Ecological Society of America Annual Meeting, Memphis, TN, August 6-11.

N. N. Shah, T.W. Dreschel, C.R. Hall, and T.E. Foster. 2005. Evaluation of a Porous Tube Hydroponics System as a Test Bed for Remote Sensing Instrumentation. *Gravitational and Space Biology Bulletin* 19(1): 42 (Abstr.).

Dreschel, T. W., P. V. Chetirkin, L. C. Garner, and V. I. Nazarenko. 2005. International Space Education Outreach: Taking Exploration to the Global Classroom. Abstract of a paper presented to *The 35th International Conference on Environmental Systems (ICES) and the 8th European Symposium on Space Environmental Control Systems (ESSECS)*, Rome, Italy.

Dreschel, T. W., C. R. Hall, T. E. Foster, M. Salganic, L. Warren, and M. Corbett. 2005. Examining Dehydration and Hypoxic Stress in Wheat Plants Using a Porous Tube Plant Nutrient Delivery System Developed for Microgravity. Abstract of a paper presented to *The 35th International Conference on Environmental Systems (ICES) and the 8th European Symposium on Space Environmental Control Systems (ESSECS),* Rome, Italy.

Corbett, M. K, T.E. Foster, C.R. Hall, and T.W. Dreschel. 2004. A Comparison of Techniques to Evaluate Plant Moisture Content for Earth and Space Applications. *Gravitational and Space Biology Bulletin* 18(1): 8 (Abstr.).

Levine, H.G., G. K, Tynes, J. H. Norikane, C. M. Frasier and T. W. Dreschel. 2001. Evaluation of a Fixed Feed Water Input Mode for Space-Based Plant Culture Applications. *Gravitational and Space Biology Bulletin* 15(1): 67 (Abstr.).

Dreschel, T. W., C.R. Hall, J. Jones, and A. Brooks. 2001. Controlling Leaf Moisture Using a Porous Tube Plant Culture System. Abstract of a paper presented to the 28th Annual Conference on Plant Growth Regulation Society of America, July 1-5, 2001, Miami Beach.

Dreschel, T. W., P.V. Chetirkin, S. Behel, and V. I. Nazarenko. 2001. Collaborative Ukrainian Experiment-Science and Technology Exchange Program for Students (CUE-STEPS). Abstract of a paper presented to the Proceedings of The 38th Annual Space Congress, May, 2001.

Dreschel, T. W., T. Foster, and C. R. Hall. 2001. A ground-based test bed for evaluating plant remote sensing technologies. *Florida Scientist* 64(1) 18 (abstr).

Rygalov, V. Ye. and T. W. Dreschel. 2001. Some approaches to the estimation of the stability of functioning closed ecological systems. *Florida Scientist* 64(1) 17-18 (abstr).

Tynes, G. K., T. W. Dreschel, H. Kasahara, and H. G. Levine. 2001. The provision of nutrients to wheat plants that are grown on a porous tube nutrient delivery system using a fibrous ion exchange resin substrate. *Florida Scientist* 64(1) 18 (abstr).

Tynes, G. K., T. W. Dreschel, H. Kasahara, and H. G. Levine. 2000. An evaluation of a fibrous ion

exchange resin substrate for the provision of nutrients to wheat growing on a porous tube nutrient delivery system. Abstract to the International Conference on Environmental Systems.

Madsen, B. C., D. M. Nickerson, and T. W. Dreschel. 2000. Comparison of Non-Linear Regression and Autoregressive Moving Average (ARMA) models for Precipitation Chemistry from East Central Florida. Abstract of a poster presented at the National Atmospheric Deposition Program Annual Meeting, 17-19 October, Saratoga Springs, New York.

Madsen, B. C., D. M. Nickerson, and T. W. Dreschel. 2000. Some Preliminary ARMA Models for Precipitation Chemistry in East Central Florida. Paper presented to the 64th Annual Meeting of the Florida Academy of Sciences. *Florida Scientist*, 63 (Supplement 1), p. 34 (abstr.).

Madsen, B. C., T. W. Dreschel, and L. A. Maull. 1999. Rainwater chemistry trends in central Florida: an update. Abstract of a poster presented to the *National Atmospheric Deposition Program* Technical Committee Meeting, Sacramento, CA, October, 1999.

Madsen, B. C., T. W. Dreschel, and L. A. Maull. 1999. Central Florida Trends in Rainwater Chemistry from 1978 to the Present. Poster presentation at the Florida Academy of Sciences 63rd Annual Meeting, March 11-13, 1999, Tampa, FL.

Dreschel, T., G. Koerner, P. Currier, S. Potter, and C. Goodman. 1998. The Fourteenth Annual Space Life Sciences Training Program at Kennedy Space Center. *Gravitational and Space Biology Bulletin* 12(1): 7 (abstr.)

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